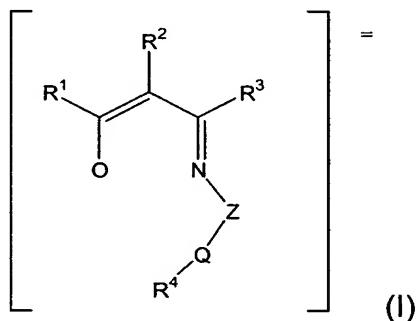


Amendments to Claims

Cancel claims 1-11 and 16-20.

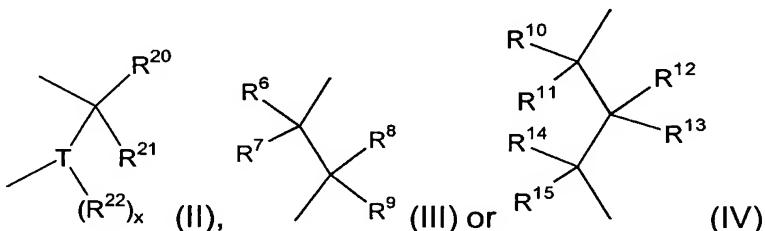
1. (cancelled) A process for the polymerization of olefins, comprising the step of contacting, at a temperature of about -100°C to about +200°C, one or more monomers selected from the group consisting of ethylene and an olefin of the formula  $\text{H}_2\text{C}=\text{CH}(\text{CH}_2)_n\text{H}$  (XXII), and a Cr, Mn, V, Ti, Zr or Hf complex of an anion of the formula (I)



wherein:

$\text{R}^1$  is hydrocarbyl or substituted hydrocarbyl,  $\text{R}^2$  is hydrogen, hydrocarbyl or substituted hydrocarbyl, and  $\text{R}^3$  is hydrogen, hydrocarbyl, substituted hydrocarbyl or a functional group, provided that  $\text{R}^1$  and  $\text{R}^2$  taken together may be ortho-arylene or substituted ortho-arylene, or  $\text{R}^1$ ,  $\text{R}^2$  and  $\text{R}^3$  taken together may form one or more rings;

$\text{Z}$  is a bridging group of the formula (II), (III) or (IV)



$\text{Q}$  is nitrogen, oxygen, phosphorous or sulfur, provided that when  $\text{Z}$  is (II),  $\text{Q}$  is oxygen;

$\text{R}^4$  is hydrogen, hydrocarbyl or substituted hydrocarbyl, provided that when  $\text{Q}$  is oxygen or sulfur  $\text{R}^4$  is not present;

$\text{R}^6$  is hydrogen, hydrocarbyl or substituted hydrocarbyl, provided that  $\text{R}^3$  and  $\text{R}^6$  together may form a ring;

R<sup>7</sup> is hydrogen, hydrocarbyl or substituted hydrocarbyl, provided that R<sup>3</sup>, R<sup>6</sup> and R<sup>7</sup> together may form an aromatic ring, or R<sup>6</sup> and R<sup>7</sup> taken together may form a ring;

R<sup>8</sup> is hydrogen, hydrocarbyl or substituted hydrocarbyl;

R<sup>9</sup> is hydrogen, hydrocarbyl or substituted hydrocarbyl, provided that R<sup>4</sup> and R<sup>9</sup> taken together may be part of a double bond to an imino nitrogen atom, or R<sup>8</sup> and R<sup>9</sup> taken together may form a carbonyl with the carbon to which they are attached, or R<sup>8</sup> and R<sup>9</sup> taken together may form a ring, or R<sup>4</sup> and R<sup>9</sup> taken together may form a ring, or R<sup>4</sup>, R<sup>8</sup> and R<sup>9</sup> taken together may form a ring, or R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup> and R<sup>9</sup> taken together may form an aromatic ring;

R<sup>10</sup>, R<sup>11</sup>, R<sup>12</sup> and R<sup>13</sup> are each independently hydrogen, hydrocarbyl or substituted hydrocarbyl, provided that R<sup>10</sup>, R<sup>11</sup>, R<sup>12</sup> and R<sup>13</sup> taken together may be ortho-arylene;

R<sup>14</sup> and R<sup>15</sup> are each independently hydrogen, hydrocarbyl or substituted hydrocarbyl, provided that R<sup>14</sup> and R<sup>15</sup> taken together may form a carbonyl with the carbon to which they are attached, or R<sup>12</sup>, R<sup>13</sup>, R<sup>14</sup>, and R<sup>15</sup> taken together may form an o-arylene group, or R<sup>10</sup>, R<sup>11</sup>, R<sup>12</sup>, R<sup>13</sup>, R<sup>14</sup>, and R<sup>15</sup> taken together may form a fused aromatic ring system, or R<sup>13</sup> and R<sup>14</sup> taken together may form a ring;

R<sup>20</sup> and R<sup>21</sup> are each independently hydrogen, hydrocarbyl or substituted hydrocarbyl, or R<sup>20</sup> and R<sup>21</sup> taken together may form a ring;

each R<sup>22</sup> is individually hydrocarbyl, oxygen or alkoxy, provided that when R<sup>22</sup> is oxygen, two of R<sup>22</sup> are taken together to form T=O;

n is an integer of 1 or more;

T is phosphorous or sulfur whose oxidation state is 3 or greater; and

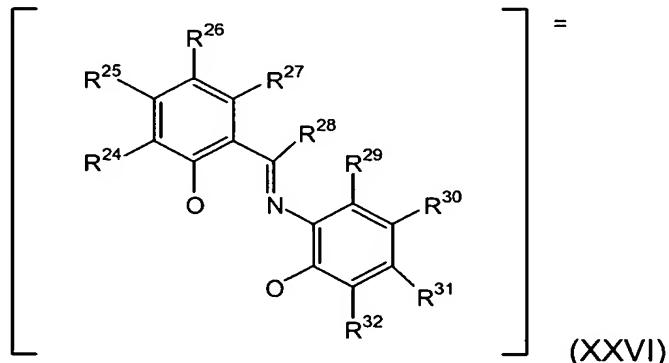
x is equal to the oxidation state of T minus 2.

2. (cancelled) The process as recited in claim 1, wherein the monomer is ethylene.

3. (cancelled) The process as recited in claim 1, wherein the transition metal is selected from the group consisting of Zr and Ti.

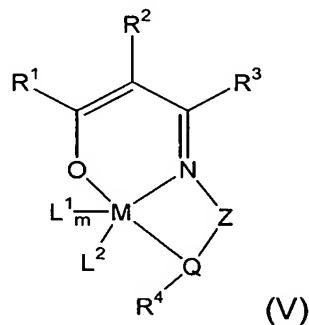
4. (cancelled) The process as recited in claim 1, wherein R<sup>1</sup> and R<sup>2</sup> taken together are o-arylene, Z is a group of the formula (III), Q is oxygen, and R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup> and R<sup>9</sup> taken together form an aromatic ring.

5. (cancelled) The process as recited in claim 4, wherein (I) has the formula



wherein R<sup>24</sup>, R<sup>25</sup>, R<sup>26</sup>, R<sup>27</sup>, R<sup>28</sup>, R<sup>30</sup>, R<sup>31</sup> and R<sup>32</sup> are each independently hydrogen, hydrocarbyl, substituted hydrocarbyl or a functional group, and R<sup>29</sup> is hydrogen, hydrocarbyl, or substituted hydrocarbyl, provided that any two of R<sup>24</sup>, R<sup>25</sup>, R<sup>26</sup>, R<sup>27</sup>, R<sup>29</sup>, R<sup>30</sup>, R<sup>31</sup> and R<sup>32</sup> vicinal to one another may be taken together to form a ring, and that R<sup>27</sup> and R<sup>28</sup> may be taken together to form a ring, or R<sup>28</sup> and R<sup>29</sup> may be taken together to form a ring.

6. (cancelled) A process for the polymerization of olefins, comprising the step of contacting, at a temperature of about -100°C to about +200°C, one or more monomers selected from the group consisting of ethylene and H<sub>2</sub>C=CH(CH<sub>2</sub>)<sub>n</sub>H (XXII), with a compound of the formula (V)

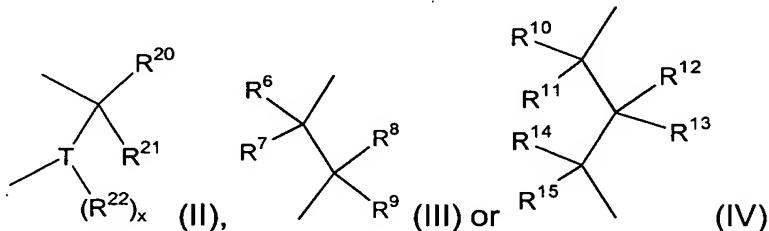


wherein:

R<sup>1</sup> is hydrocarbyl or substituted hydrocarbyl, R<sup>2</sup> is hydrogen, hydrocarbyl or substituted hydrocarbyl, and R<sup>3</sup> is hydrogen, hydrocarbyl, substituted hydrocarbyl or

a functional group, provided that R<sup>1</sup> and R<sup>2</sup> taken together may be ortho-arylene or substituted ortho-arylene, or R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> taken together may form one or more rings;

Z is a bridging group of the formula (II), (III) or (IV)



Q is nitrogen, oxygen, phosphorous or sulfur, provided that when Z is (II), Q is oxygen;

R<sup>4</sup> is hydrogen, hydrocarbyl or substituted hydrocarbyl, provided that when Q is oxygen or sulfur R<sup>4</sup> is not present;

R<sup>6</sup> is hydrogen, hydrocarbyl or substituted hydrocarbyl, provided that R<sup>3</sup> and R<sup>6</sup> taken together may form a ring;

R<sup>7</sup> is hydrogen, hydrocarbyl or substituted hydrocarbyl, provided that R<sup>3</sup>, R<sup>6</sup> and R<sup>7</sup> taken together may form an aromatic ring, or R<sup>6</sup> and R<sup>7</sup> taken together may form a ring;

R<sup>8</sup> is hydrogen, hydrocarbyl or substituted hydrocarbyl;

R<sup>9</sup> is hydrogen, hydrocarbyl or substituted hydrocarbyl, provided that R<sup>4</sup> and R<sup>9</sup> taken together may be part of a double bond to an imino nitrogen atom, or R<sup>8</sup> and R<sup>9</sup> taken together may form a carbonyl with the carbon to which they are attached, or R<sup>8</sup> and R<sup>9</sup> taken together may form a ring, or R<sup>4</sup> and R<sup>9</sup> taken together may form a ring, or R<sup>4</sup>, R<sup>8</sup> and R<sup>9</sup> taken together may form a ring, or R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup> and R<sup>9</sup> taken together may form an aromatic ring;

R<sup>10</sup>, R<sup>11</sup>, R<sup>12</sup> and R<sup>13</sup> are each independently hydrogen, hydrocarbyl or substituted hydrocarbyl, provided that R<sup>10</sup>, R<sup>11</sup>, R<sup>12</sup> and R<sup>13</sup> taken together may be ortho-arylene;

R<sup>14</sup> and R<sup>15</sup> are each independently hydrogen, hydrocarbyl or substituted hydrocarbyl, provided that R<sup>14</sup> and R<sup>15</sup> taken together may form a carbonyl with the carbon to which they are attached, or R<sup>12</sup>, R<sup>13</sup>, R<sup>14</sup>, and R<sup>15</sup> taken together may form an o-arylene group, or R<sup>10</sup>, R<sup>11</sup>, R<sup>12</sup>, R<sup>13</sup>, R<sup>14</sup>, and R<sup>15</sup> taken together may form a fused aromatic ring system, or R<sup>13</sup> and R<sup>14</sup> taken together may form a ring;

$R^{20}$  and  $R^{21}$  are each independently hydrogen, hydrocarbyl or substituted hydrocarbyl, or  $R^{20}$  and  $R^{21}$  taken together may form a ring;

each  $R^{22}$  is individually hydrocarbyl, oxygen or alkoxy, provided that when  $R^{22}$  is oxygen, two of  $R^{22}$  are taken together to form  $T=O$ ;

$n$  is an integer of 1 or more;

$T$  is phosphorous or sulfur whose oxidation state is 3 or greater;

$x$  is equal to the oxidation state of  $T$  minus 2;

$M$  is Ti, Zr, Hf, V, Mn or Cr;

$m$  is an integer equal to the valence of  $M$  minus 2; and

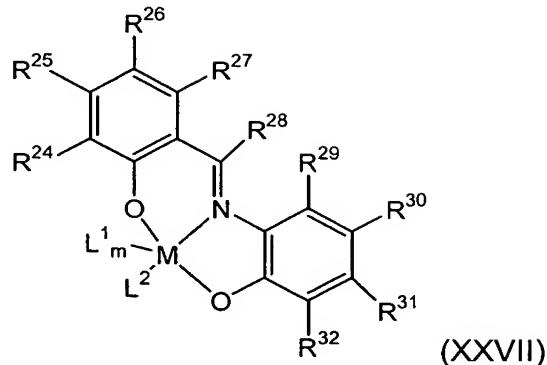
each  $L^1$  is independently a monodentate monoanionic ligand and at least for one of  $L^1$  an ethylene molecule may insert between  $L^1$  and  $M$ , and  $L^2$  is a monodentate neutral ligand which may be displaced by ethylene or an empty coordination site, provided that an  $L^1$  and  $L^2$  taken together may be a monoanionic polydentate ligand and at least for one of these monoanionic polydentate ligands ethylene may insert between said monoanionic polydentate ligand and  $M$ .

7. (cancelled) The process as recited in claim 6, wherein the monomer is ethylene.

8. (cancelled) The process as recited in claim 6, wherein the transition metal is selected from the group consisting of Zr and Ti.

9. (cancelled) The process as recited in claim 6, wherein  $R^1$  and  $R^2$  taken together are o-arylene,  $Z$  is a group of the formula (III),  $Q$  is oxygen, and  $R^6$ ,  $R^7$ ,  $R^8$  and  $R^9$  taken together form an aromatic ring.

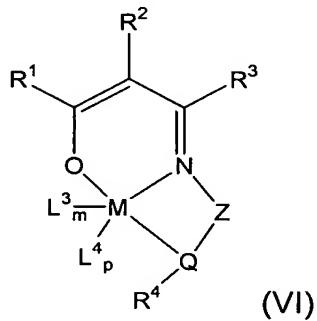
10. (cancelled) The process as recited in claim 6, wherein (V) has the formula



wherein  $R^{24}$ ,  $R^{25}$ ,  $R^{26}$ ,  $R^{27}$ ,  $R^{29}$ ,  $R^{30}$ ,  $R^{31}$  and  $R^{32}$  are each independently hydrogen, hydrocarbyl, substituted hydrocarbyl or a functional group, and  $R^{28}$  is hydrogen, hydrocarbyl, or substituted hydrocarbyl, provided that any two of  $R^{24}$ ,  $R^{25}$ ,  $R^{26}$ ,  $R^{27}$ ,  $R^{29}$ ,  $R^{30}$ ,  $R^{31}$  and  $R^{32}$  vicinal to one another may be taken together to form a ring, and that  $R^{27}$  and  $R^{28}$  may be taken together to form a ring, or  $R^{28}$  and  $R^{29}$  may be taken together to form a ring.

11. (cancelled) The process as recited in claim 6, wherein the monomers and compound of the formula (V) are contacted in the further presence of a catalyst activator.

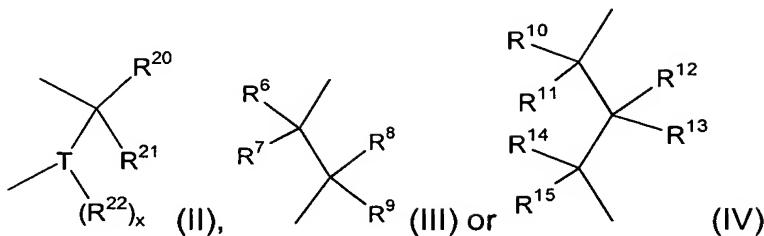
12. A compound of the formula (VI)



wherein:

$R^1$  is hydrocarbyl or substituted hydrocarbyl,  $R^2$  is hydrogen, hydrocarbyl or substituted hydrocarbyl, and  $R^3$  is hydrogen, hydrocarbyl, substituted hydrocarbyl or a functional group, provided that  $R^1$  and  $R^2$  taken together may be ortho-arylene or substituted ortho-arylene, or  $R^1$ ,  $R^2$  and  $R^3$  taken together may form one or more rings;

$Z$  is a bridging group of the formula (II), (III) or (IV)



Q is nitrogen, oxygen, phosphorous or sulfur, provided that when Z is (II), Q is oxygen;

R<sup>4</sup> is hydrogen, hydrocarbyl or substituted hydrocarbyl, provided that when Q is oxygen or sulfur R<sup>4</sup> is not present;

R<sup>6</sup> is hydrogen, hydrocarbyl or substituted hydrocarbyl, provided that R<sup>3</sup> and R<sup>6</sup> taken together may form a ring;

R<sup>7</sup> is hydrogen, hydrocarbyl or substituted hydrocarbyl, provided that R<sup>3</sup>, R<sup>6</sup> and R<sup>7</sup> taken together may form an aromatic ring, or R<sup>6</sup> and R<sup>7</sup> taken together may form a ring;

R<sup>8</sup> is hydrogen, hydrocarbyl or substituted hydrocarbyl;

R<sup>9</sup> is hydrogen, hydrocarbyl or substituted hydrocarbyl, provided that R<sup>4</sup> and R<sup>9</sup> taken together may be part of a double bond to an imino nitrogen atom, or R<sup>8</sup> and R<sup>9</sup> taken together may form a carbonyl with the carbon to which they are attached, or R<sup>8</sup> and R<sup>9</sup> taken together may form a ring, or R<sup>4</sup> and R<sup>9</sup> taken together may form a ring, or R<sup>4</sup>, R<sup>8</sup> and R<sup>9</sup> taken together may form a ring, or R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup> and R<sup>9</sup> taken together may form an aromatic ring;

R<sup>10</sup>, R<sup>11</sup>, R<sup>12</sup> and R<sup>13</sup> are each independently hydrogen, hydrocarbyl or substituted hydrocarbyl, provided that R<sup>10</sup>, R<sup>11</sup>, R<sup>12</sup> and R<sup>13</sup> taken together may be ortho-arylene;

R<sup>14</sup> and R<sup>15</sup> are each independently hydrogen, hydrocarbyl or substituted hydrocarbyl, provided that R<sup>14</sup> and R<sup>15</sup> taken together may form a carbonyl with the carbon to which they are attached, or R<sup>12</sup>, R<sup>13</sup>, R<sup>14</sup>, and R<sup>15</sup> taken together may form an o-arylene group, or R<sup>10</sup>, R<sup>11</sup>, R<sup>12</sup>, R<sup>13</sup>, R<sup>14</sup>, and R<sup>15</sup> taken together may form a fused aromatic ring system, or R<sup>13</sup> and R<sup>14</sup> taken together may form a ring;

R<sup>20</sup> and R<sup>21</sup> are each independently hydrogen, hydrocarbyl or substituted hydrocarbyl, or R<sup>20</sup> and R<sup>21</sup> taken together may form a ring;

each R<sup>22</sup> is individually hydrocarbyl, oxygen or alkoxy, provided that when R<sup>22</sup> is oxygen, two of R<sup>22</sup> are taken together to form T=O;

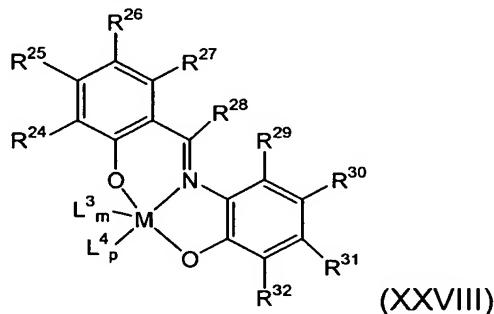
n is an integer of 1 or more;

T is phosphorous or sulfur whose oxidation state is 3 or greater;  
x is equal to the oxidation state of T minus 2;  
M is Ti, Zr, Hf, V, Mn or Cr;  
m is an integer equal to the valence of M minus 2; and  
p is 0 or 1; and  
each L<sup>3</sup> is independently a monodentate monoanionic ligand, and L<sup>4</sup> is a monodentate neutral ligand or an empty coordination site, provided that an L<sup>3</sup> and L<sup>4</sup> taken together may be a monoanionic bidentate ligand.

13. The compound as recited in claim 12, wherein M is selected from the group consisting of Zr and Ti.

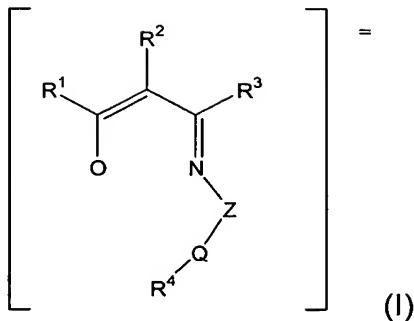
14. The compound as recited in claim 12, wherein R<sup>1</sup> and R<sup>2</sup> taken together are o-arylene, Z is a group of the formula (III), Q is oxygen, and R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup> and R<sup>9</sup> taken together form an aromatic ring.

15. The compound as recited in claim 12, wherein (VI) has the formula



wherein R<sup>24</sup>, R<sup>25</sup>, R<sup>26</sup>, R<sup>27</sup>, R<sup>29</sup>, R<sup>30</sup>, R<sup>31</sup> and R<sup>32</sup> are each independently hydrogen, hydrocarbyl, substituted hydrocarbyl or a functional group, and R<sup>28</sup> is hydrogen, hydrocarbyl, or substituted hydrocarbyl, provided that any two of R<sup>24</sup>, R<sup>25</sup>, R<sup>26</sup>, R<sup>27</sup>, R<sup>29</sup>, R<sup>30</sup>, R<sup>31</sup> and R<sup>32</sup> vicinal to one another may be taken together to form a ring, and that R<sup>27</sup> and R<sup>28</sup> may be taken together to form a ring, or R<sup>28</sup> and R<sup>29</sup> may be taken together to form a ring.

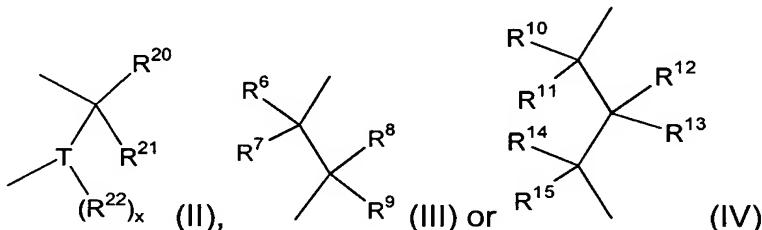
16. (cancelled) A polymerization catalyst component comprising a Ti, Zr, Hf, V, Mn or Cr complex of an anion of the formula (I)



wherein:

R<sup>1</sup> is hydrocarbyl or substituted hydrocarbyl, R<sup>2</sup> is hydrogen, hydrocarbyl or substituted hydrocarbyl, and R<sup>3</sup> is hydrogen, hydrocarbyl, substituted hydrocarbyl or a functional group, provided that R<sup>1</sup> and R<sup>2</sup> taken together may be ortho-arylene or substituted ortho-arylene, or R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> taken together may form one or more rings;

Z is a bridging group of the formula (II), (III) or (IV)



Q is nitrogen, oxygen, phosphorous or sulfur, provided that when Z is (II), Q is oxygen;

R<sup>4</sup> is hydrogen, hydrocarbyl or substituted hydrocarbyl, provided that when Q is oxygen or sulfur R<sup>4</sup> is not present;

R<sup>6</sup> is hydrogen, hydrocarbyl or substituted hydrocarbyl, provided that R<sup>3</sup> and R<sup>6</sup> together may form a ring;

R<sup>7</sup> is hydrogen, hydrocarbyl or substituted hydrocarbyl, provided that R<sup>3</sup>, R<sup>6</sup> and R<sup>7</sup> together may form an aromatic ring, or R<sup>6</sup> and R<sup>7</sup> taken together may form a ring;

R<sup>8</sup> is hydrogen, hydrocarbyl or substituted hydrocarbyl;

R<sup>9</sup> is hydrogen, hydrocarbyl or substituted hydrocarbyl, provided that R<sup>4</sup> and R<sup>9</sup> taken together may be part of a double bond to an imino nitrogen atom, or R<sup>8</sup> and R<sup>9</sup> taken together may form a carbonyl with the carbon to which they are attached, or R<sup>8</sup> and R<sup>9</sup> taken together may form a ring, or R<sup>4</sup> and R<sup>9</sup> taken together may form a

ring, or  $R^4$ ,  $R^8$  and  $R^9$  taken together may form a ring, or  $R^6$ ,  $R^7$ ,  $R^8$  and  $R^9$  taken together may form an aromatic ring;

$R^{10}$ ,  $R^{11}$ ,  $R^{12}$  and  $R^{13}$  are each independently hydrogen, hydrocarbyl or substituted hydrocarbyl, provided that  $R^{10}$ ,  $R^{11}$ ,  $R^{12}$  and  $R^{13}$  taken together may be ortho-arylene;

$R^{14}$  and  $R^{15}$  are each independently hydrogen, hydrocarbyl or substituted hydrocarbyl, provided that  $R^{14}$  and  $R^{15}$  taken together may form a carbonyl with the carbon to which they are attached, or  $R^{12}$ ,  $R^{13}$ ,  $R^{14}$ , and  $R^{15}$  taken together may form an o-arylene group, or  $R^{10}$ ,  $R^{11}$ ,  $R^{12}$ ,  $R^{13}$ ,  $R^{14}$ , and  $R^{15}$  taken together may form a fused aromatic ring system, or  $R^{13}$  and  $R^{14}$  taken together may form a ring;

$R^{20}$  and  $R^{21}$  are each independently hydrogen, hydrocarbyl or substituted hydrocarbyl, or  $R^{20}$  and  $R^{21}$  taken together may form a ring;

each  $R^{22}$  is individually hydrocarbyl, oxygen or alkoxy, provided that when  $R^{22}$  is oxygen, two of  $R^{22}$  are taken together to form  $T=O$ ;

$n$  is an integer of 1 or more;

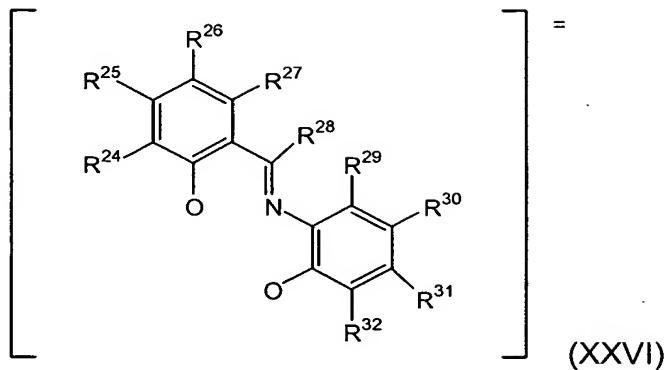
$T$  is phosphorous or sulfur whose oxidation state is 3 or greater; and

$x$  is equal to the oxidation state of  $T$  minus 2.

17. (cancelled) The polymerization catalyst component as recited in claim 16, wherein the transition metal is selected from the group consisting of Zr and Ti.

18. (cancelled) The polymerization catalyst component as recited in claim 16, wherein  $R^1$  and  $R^2$  taken together are o-arylene,  $Z$  is a group of the formula (III),  $Q$  is oxygen, and  $R^6$ ,  $R^7$ ,  $R^8$  and  $R^9$  taken together form an aromatic ring.

19. (cancelled) The polymerization catalyst component as recited in claim 18, wherein (I) has the formula

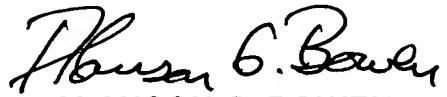


wherein R<sup>24</sup>, R<sup>25</sup>, R<sup>26</sup>, R<sup>27</sup>, R<sup>29</sup>, R<sup>30</sup>, R<sup>31</sup> and R<sup>32</sup> are each independently hydrogen, hydrocarbyl, substituted hydrocarbyl or a functional group, and R<sup>28</sup> is hydrogen, hydrocarbyl, or substituted hydrocarbyl, provided that any two of R<sup>24</sup>, R<sup>25</sup>, R<sup>26</sup>, R<sup>27</sup>, R<sup>29</sup>, R<sup>30</sup>, R<sup>31</sup> and R<sup>32</sup> vicinal to one another may be taken together to form a ring, and that R<sup>27</sup> and R<sup>28</sup> may be taken together to form a ring, or R<sup>28</sup> and R<sup>29</sup> may be taken together to form a ring.

20. (cancelled) The polymerization catalyst component as recited in claim 16, further comprising a catalyst activator.

In view of the foregoing, allowance of the above-referenced application is respectfully requested.

Respectfully submitted,



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